

Pilotix DIY Kit F405V3 FC + 60A ESC V2

User manual



Content

1. Product overview.....	3
2. ESC Installation & Wiring.....	3
3. Flight Controller (FC) Wiring.....	4
4. Safety & Usage Rules.....	5
Contacts:	6

1. Product overview



Fig.1. Pilotix DIY Kit F405V3 FC + 60A ESC V2

Pilotix F405V3 FC + 60A ESC V2 is an FPV flight controller and electronic speed controller stack featuring an STM32F405 microcontroller with Betaflight firmware support. The flight controller utilizes an ICM42688-P gyroscope connected via SPI, built-in accelerometer, SPL06 barometer, and built-in magnetometer, with analog OSD capability and dual analog video inputs. The 4-in-1 ESC operates on AT32F421K8U7 MCU running AM32 firmware, providing 60A continuous current per channel with 70A peak, supporting 3-6S input voltage through XT60 connector. The system features 5V/2.5A and 9V/2.5A BEC outputs, five UART ports, bi-directional DShot support, and 30.5 x 30.5mm mounting pattern.

2. ESC Installation & Wiring

The ESC is designed to handle high current loads. Pay close attention to the power leads.

Wiring Steps:

1. Power Input: Solder high-quality XT60/XT90 leads to the "+" and "-" pads. Ensure the polarity is correct.
2. Capacitor: Solder a high-voltage capacitor (e.g., 35V-50V depending on your S-count) to the power pads. This is mandatory for 6S-8S builds to filter voltage spikes.
3. Motor Pads: Solder motor wires to the pads on the left (1 & 2) and right (3 & 4).
4. Link to FC: Connect the 8-pin harness to the socket on the top edge. This transmits power, motor signals (S1-S4), and telemetry to the FC.

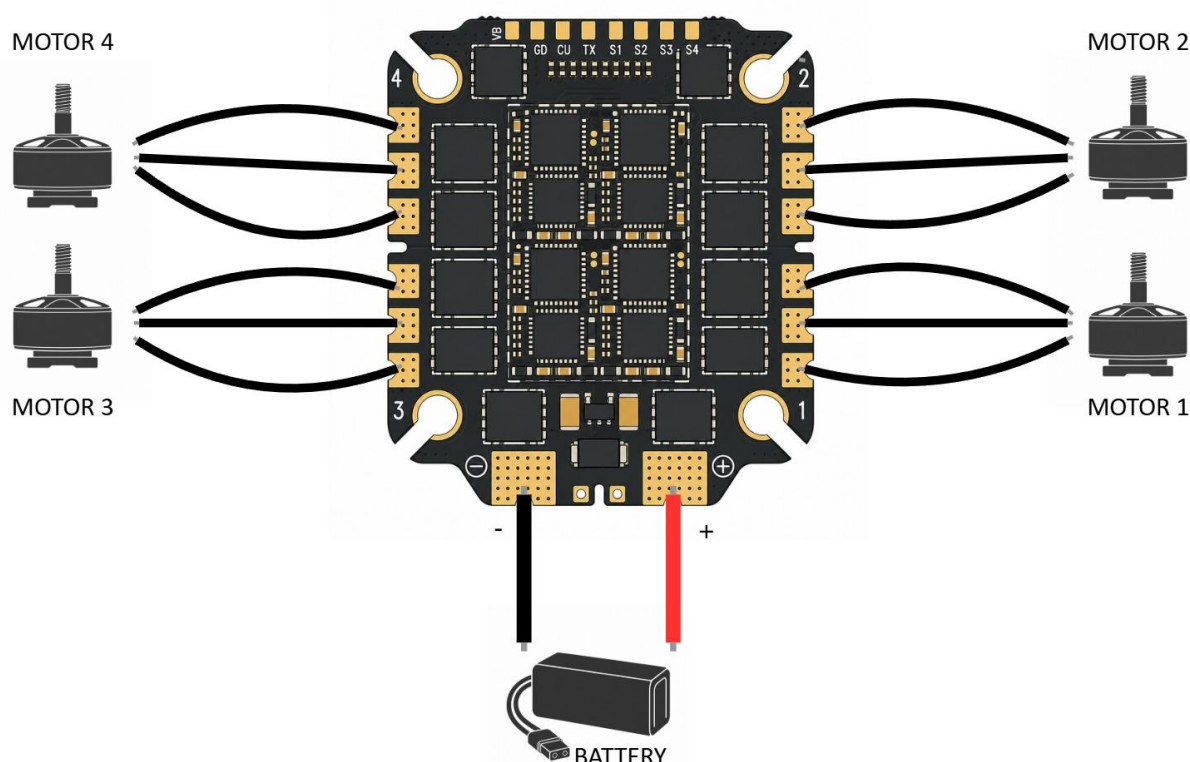


Fig.2. ESC installation & wiring

3. Flight Controller (FC) Wiring

The F405 V3 FC offers a "Plug-and-Play" experience for many peripherals.

Receiver & Serial Ports (UARTs):

- UART 1: Dedicated for GPS (TX to R1, RX to T1).
- UART 2: Primary Receiver port (ELRS/CRSF).
- UART 3: ESC Connection / Telemetry.
- UART 4: VTX Control (SmartAudio / IRC Tramp).
- UART 5: Internal Bluetooth (SpeedyBee App compatible).

Video & Cameras:

- Dual Camera Support: Connect Camera 1 and Camera 2 to the CAM1 and CAM2 pads. Use the USER3 mode in Betaflight to switch between them mid-flight.
- VTX Voltage Selection: * Solder the jumper to VCC for 3-4S setups.
 - Solder the jumper to 9V for 4-6S setups (recommended to protect VTX from high voltage).
- Digital Systems: For DJI O3 or Walksnail, use the dedicated SBUS/TX4/RX4 pads or connector.

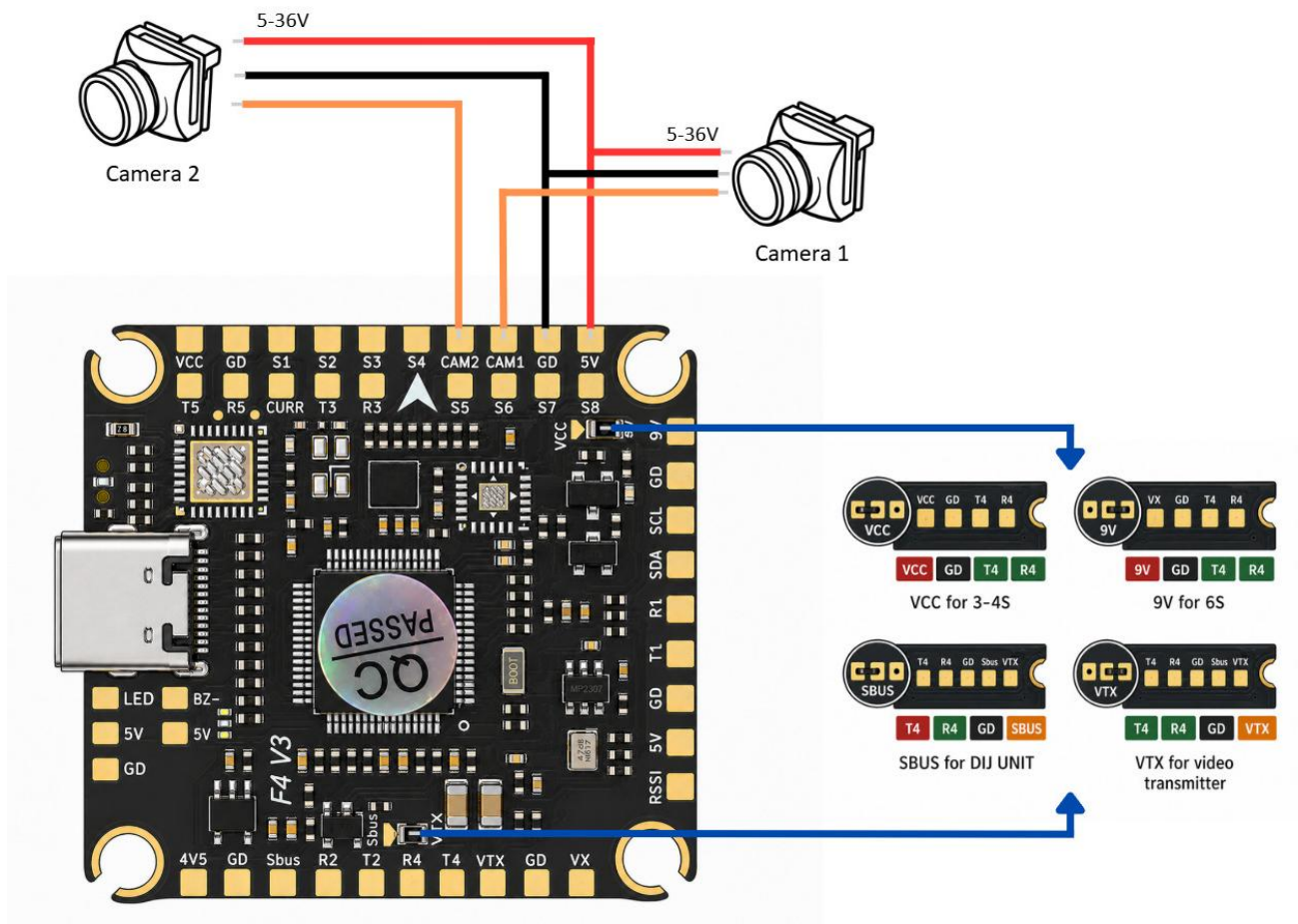


Fig.3. FC wiring diagram

4. Safety & Usage Rules

1. **Voltage Check:** Before connecting your VTX, verify the voltage jumper (9V vs VCC). Connecting a 5V/9V VTX to VCC on an 8S battery will cause immediate failure.
2. **Smoke Stopper:** Always use a current-limiting device for the first power-on.
3. **Firmware Updates:** Use esc-configurator.com for the AM32 ESC.
4. **Mounting:** Use the provided anti-vibration grommets. High-current ESCs create electromagnetic noise; keep the FC physically separated by at least 2-3mm from the ESC.
5. An 80A ESC generates significant heat. Do not mount the stack in an enclosed, unventilated space.

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